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The Polyporaceae of North America.—IV. The Genus Elfvingia

By William Alphonso Murrill

The mycological field of Europe is small as compared with that of America. The European mycologist has in general a small country with limited variation in altitude, geological formation and season, as well as a limited number of host plants, few of which are readily attacked by wood-loving fungi ; hence it is possible to know more minutely the forms that do occur and to segregate varieties according to host, position and other details of which little note has yet been taken in America. The confusion of forms in Europe is largely due to former difficulties in travel, limited means, lack of interest in the work of others and lack of generalization, a condition of affairs accounted for to some extent by difference in language and the antipathy common among neighbors. Upon receiving an exotic plant, be it from Guinea or Greenland, the mycologist of limited outlook makes a heroic effort to correlate it with some species growing in his immediate vicinity and, failing to do this, either loses interest altogether in the matter or half-heartedly looks up a name for it in some foreign flora. To send American fungi abroad for determination is usually to be either disappointed or deceived. To many European botanists, Kew is a very foreign country and America is off the map.

One should not be surprised to find, therefore, that many American plants are parading under false names and that many are entirely new to the botanical public ; and what is true of species is likewise true of genera ; the old molds must be recast and several new ones added to accommodate these large additions. For our northern forms, the work of recasting has been largely done by Dr. P. A. Karsten, of Finland, who has to deal with a local flora very similar to our own in its lines of cleavage, although the abundance of species present in our latitude is unknown in Finland. The basis of this similarity between North American and North European and Russian genera is found in the fact that these countries have been practically continuous so far as distribution is concerned, whereas the continents of the southern hemisphere have very probably been for ages widely separated by impassable barriers of open sea. The principles above enunciated are well illustrated in the genus *Elfvingia* of Karsten, a discussion of which follows.

ELFVINGIA Karsten, Findlands Basidsv. 333. 1889

This genus was described by Karsten as follows:

> "Hatten beklädd med en spröd, skorpartad hud, glatt. Cystiderna föga anmärkningsvärda. Basiderna n. klotrunda, 4-sporiga. Sporerna äggrunda, vårtfulla, gulbrunaktiga."

The only representative of the genus in Finland, according to Karsten, is *Elfvingia applanata* (Pers.) Karst., a species first described as *Boletus Lipsiensis* by Batsch (Elench. Fung. **2**: 183–185. *pl. 25. Fig. 130. a, b.* 1786), then as *Boletus applanatus* by Persoon (Obs. Myc. **2**: 2. 1799), and later as *Polyporus merismoides* by Corda (Sturm, Deutschl. Flora, **3**: 139–142. *pl. 63.* 1837). Its close relationship to *P. fomentarius* L. may be judged from the fact that Persoon in his Synopsis treats it as a variety of the latter plant, although he had described it as a distinct species only two years before. In the present treatment of the genus *Elfvingia*, **E. Lipsiensis** (Batsch) will not appear, since it does not occur in America, its place being taken by *E. megaloma* (Lév.).

Synopsis of the North American Species

1. Context ferruginous, spores hyaline, pileus usually ungulate. 2.
Context darker, fulvous to chocolate-brown, spores yellowish-brown, pileus usually applanate. 3.

2. Pileus exactly ungulate, pores 3 to a mm., growing in temperate regions south to Carolina. 1. *E. fomentaria.*
Pileus compressed ungulate, pores 5 to a mm., growing in tropical America and the gulf states. 2. *E. fasciata.*

3. Hymenophore annual, persisting above later growths; pileus reniform, margin thin, spores dark brown, roughly echinulate, 8–9 × 7 μ. 3. *E. reniformis.*
Hymenophore truly perennial, tubes stratified, spores smooth or nearly so. 4.

4. Crust white, becoming brown, not separating, spores smooth, 8–9 × 5 μ, growing in temperate regions. 4. *E. megaloma.*
Crust brown, context floccose, softer, spores smooth or slightly echinulate, growing in tropical America. 5.

5. Pileus thick, crust smooth and very hard, hymenium plane, margin truncate, very smooth, often laccate, context very thin, spores smooth or slightly verrucose, 7–9 × 5–6 μ. 5. *E. tornata.*
Pileus thin, crust radially wrinkled, thinner, hymenium concave, margin undulate, never laccate, spores smooth, 8 × 5 μ. 6. *E. Lionetii.*

1. **Elfvingia fomentaria** (L.)

Boletus fomentarius L. Sp. Pl. 1176. 1753.

Boletus ungulatus Bull. Herb. France, *pl. 491. fig. 2, C. D. E.*

Polyporus fomentarius Fr. Syst. **1**: 374. 1821.

Fomes fomentarius Gill. Champ. Fr. **1**: 686. 1878; Icon. 467.

See also Sowerby, Engl. Fungi, *pl. 133*, and Schaeffer, *pl. 137*.

This fungus is widely distributed on birch and beech in the temperate regions of Europe and North America. It varies little in shape and appearance in the north, though very small forms occur in high latitudes. One of these brought from the Isle à la Crosse by Dr. Richardson was described by Berkeley as var. *excavatus* (Ann. Nat. Hist. **3**: 387. 1839). The type specimens at Kew agree in all respects with *P. fomentarius* as it grows in the Adirondack Mountains and in Sweden. A more southern form, larger, thicker, more uniform and ashy in color, is known in Europe as *Polyporus Inzengae* De Not., but as this does not occur in North America it need not be discussed at present. When fruit-bodies of *P. fomentarius* become old and indurated and lose their outer pellicle the horny crust takes a high ivory-black polish and is very different from the usual covering of the plant. It is this form that has frequently been mistaken for *P. nigricans* Fr. At Kew, *P. igniarius* and *P. applanatus* have been variously confused with *P. fomentarius*.

In addition to the usual European and American exsiccati, all of which contain this species, material has been examined from Germany (Magnus), Sweden (Murrill), France (Patouillard), Finland (Karsten), Italy (Bresadola), Scotland (Klotsch), Canada (Macoun), Maine (Ricker), New Hampshire (Miss Minns), Massachusetts (Mrs. French), Wisconsin (Baker), New York (Underwood), Connecticut (Miss White), and most of the other states south to North Carolina and west to California.

2. **Elfvingia fasciata** (Sw.)

Boletus fasciatus Sw. Prod. 149. 1788; Fl. Ind. Occ. **3**: 1921. 1806.

Polyporus fasciatus Fr. Syst. **1**: 373. 1821.

Polyporus sclerodermeus Lév. Ann. Sc. Nat. Bot. III. **5**: 129. 1846.

Polyporus marmoratus Berk. & Curt. Proc. Am. Acad. **4**: 122. 1858.

Fomes fasciatus Cooke, Grevillea, **14**: 21. 1885.

Specimens examined: Ellis & Everhart, N. A. Fungi, no. 1702; Florida (Martin, Calkins, Rolfs, Lloyd, Rau), Louisiana (Langlois), Alabama (Underwood, Earle, Baker), Texas (Egeling), Jamaica (Earle).

This plant is fairly abundant in tropical America, being known from nearly all localities that have been explored. Earle found it at three different points in Jamaica growing on *Cedrela* and cocoanut logs. It replaces *E. fomentaria* in the south, but cannot be confused with it as some have supposed.

3. **Elfvingia reniformis** (Morg.)

Polyporus reniformis Morg. Jour. Cincinnati Soc. Nat. Hist. **8**: 103. 1885.

Fomes reniformis Sacc. Syll. **6**: 187. 1888.

Collections examined: Ohio (Morgan), Kentucky (Miss Price), Indiana (Underwood), Virginia (Murrill, Mrs. Murrill), North Carolina (Memminger), Alabama (Underwood, Earle), Louisiana (Langlois).

When first sent to Kew this plant was determined as *P. applanatus* Pers., a closely allied European species. Later it was placed by Cooke under *P. incrassatus* Berk., a plant indigenous to Australia! It may be said, however, that the specimens now at Kew are not fairly representative even of the form and much less of the habit of Morgan's species. The following extract from one of D. L. James' letters written in 1882 refers to the peculiarities of *P. reniformis*: "I am rather surprised at my fungus turning out to be *P. applanatus*. It grows at the foot of old oak stumps and trees and seems to be an annual, the previous year's growth being found distinct and above the new growth in a decayed condition. The pileus does not harden as in *P. applanatus*." By *P. applanatus* is, of course, meant our ordinary species, *P. megaloma* Lév. "Again, the hymenial surface instead of being flat, is curved upwards in every case, this feature being well shown in the specimen sent.

However, your experience I shall certainly hold above my ignorance."

During a recent trip through the southwestern part of Virginia, I found this fungus very common on stumps and decaying trunks of oak. In every case the fruit-bodies of previous years were dead, with the later growths below. I have specimens taken from a white oak trunk on which I saw the first fruit-bodies two years ago and some of these have three layers, some two and some one, only the last year's growth in each case being alive. This corroborates James' testimony to his belief that the fruit-bodies are annual. During the same trip, I collected a few specimens of *E. megaloma* on its usual hosts and noted with interest that the two species are as distinct in Virginia as they are farther north. Facts thus far collected indicate that *E. reniformis* is a southern form and confined to a much more restricted area than *E. megaloma*, while within this area it is often abundant and quite destructive to the oak, its favorite host.

4. **Elfvingia megaloma** (Lév.)

Polyporus megaloma Lév. Ann. Sc. Nat. Bot. III. **5**: 128. 1846.

Polyporus leucophaeus Mont. Syll. Crypt. 157. 1856.

Fomes megaloma Cooke, Grevillea, **14**: 18. 1885.

Ganoderma leucophaeum Pat. Bull. Soc. Myc. **5**: 73. 1889.

Specimens have been examined from New York (Shear, Murrill), Canada (Anderson), Pennsylvania (Ellis), Virginia (Miss V. W. Murrill, Murrill), and nearly all the other states west to California and south to Georgia. The plant occurs abundantly on dead or dying wood of oak, sweet gum, poplar and other deciduous trees. In the popular mind it is associated with etching because its hymenium changes to a darker color when bruised. Owing to the close resemblance to *P. applanatus* Pers. in habit and appearance, it has been generally known under that name among American mycologists. The correct name for it, however, appears to be that assigned to it by Léveillé in 1846 on receiving specimens collected by Ménand in New York. In connection with his description, he notes that it is near *P. applanatus* in form, consistency and .volume, but differs essentially in the color of the cap and the pores and especially in the presence of a wide sterile border circumscribing the tubes below.

5. **Elfvingia tornata** (Pers.)

Polyporus tornatus Pers.; Gaud. Voy. Freyc. Bot. 173. 1826.
Polyporus australis Fr. Elench. 108. 1828.
Fomes australis Cooke, Grevillea, **14**: 18. 1885.
Ganoderma australe Pat. Bull. Soc. Myc. **5**: 71. 1889.
Scindalma tornatum Kuntze, Rev. Gen. **3**: 517. 1898.

Described from islands in the Pacific ocean and apparently of general occurrence throughout tropical America, since most of the collections from that region contain specimens of it. A large plant was collected last year by Percy Wilson in Porto Rico, and Earle on his recent visit to Jamaica found it at three different stations; at Port Maria on a dead limb of a leguminous tree, at Hope Gardens on a dead deciduous trunk and at Port Antonio on the stump of a hog plum and the fallen trunk of a cocoanut palm.

6. **Elfvingia Lionetii** (Rolland)

Ganoderma Lionetii Rolland, Bull. Soc. Myc. **17**: 180. *pl. 8.* 1901.

This plant was collected by M. Lionnet on trunks in the isthmus of Panama. It is closely allied to *E. tornata*, but is thinner with a thinner crust, which is usually profoundly wrinkled from the center outward. The context is floccose, elastic, brownish-rufous, and the spores ovoid, smooth, fulvous, 8 x 5 μ. Several specimens are in the New York Botanical Garden collected by C. L. Smith in Nicaragua.

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